

RECEIVED
CENTRAL FAX CENTER

DEC 21 2006

Remarks:

The Applicant would like to thank the Examiner for careful review of remarks filed in response to a previous Office Action. The present remarks are intended to be responsive to the new ground of rejection set forth in the Office Action of July 21, 2006. Please reconsider the application in view of the above amendments and the following remarks.

1. Attorney Docket Number

Please note that the Applicant has requested change of the docket number of this application.

2. Claim Rejections – 35 U.S.C. § 102(b)

Claims 18-21, 23 and 26-28 stand rejected as anticipated by Kan (U.S. Patent No. 5,343,440). The Applicant respectfully traverses for the following reasons.

Claim 18 recites a method of estimating velocity ahead of a drill bit disposed in a subsurface region. According to claim 18, the method includes obtaining surface seismic data for a region of interest. During drilling of a borehole traversing the subsurface region, a travel time is determined for a seismic wave generated from a surface of the region to a location in the borehole when the drill bit is at selected depths in the borehole. The method includes determining a velocity from the travel time and the selected depths; and inverting the surface seismic data to determine a velocity ahead of the drill bit while constraining velocity between the surface and the drill bit to be consistent with the velocity determined from the travel time.

Kan was asserted as showing all the limitations of claim 18. Applicant respectfully disagrees. Kan shows determining a travel time of a seismic wave from a surfaced location to a selected depth in the wellbore with a receiver inserted into the wellbore after the drill string is removed from the wellbore. Kan does not show making the travel time determination when the drill bit is at a selected depth in the wellbore. The section of Kan referenced in the Office Action (col. 7, line 66 to col. 8, line 57) only discloses making a vertical seismic profile (VSP) survey. VSP surveys are conducted using receivers

U.S. Patent Application No. 10/604,878

Atty. Docket No. 19.0380

Page 6

lowered into the wellbore, typically at the end of an armored electrical cable. See, e.g., U.S. Pat. No. 4,926,393 issued to McClellan et al., and certain patent references cited therein, and particularly U.S. Pat. No. 5,229,552 issued to Cole. Applicant also respectfully refers the Examiner to U.S. Pat. No. 6,967,898; 6,201,765; and 5,790,473 as indicative of the history of VSP surveys. Note that the earliest references to VSP surveys indicate that such surveys are acquired by inserting a receiver or array of such receivers into the wellbore. Such insertion requires removing the drill string (and drill bit) from the wellbore. Therefore, the drill bit cannot be at a selected depth in the wellbore while determining seismic wave travel time, as recited in claim 18. Kan therefore cannot anticipate claim 18.

Claims 19-25 ultimately depend from claim 18 and are believed to be patentable over Kan for at least the same reasons set forth with respect to claim 18.

Claim 26 recites a method similar in scope to claim 18. Just as is the case for claim 18, claim 26 recites that travel time of seismic waves from the surface to a selected depth in the Earth is determined while the drill bit is at a selected depth. Kan does not disclose determining seismic travel time with a drill bit disposed at a select depth in the Earth as explained above with reference to claim 18. Accordingly, Kan cannot anticipate claim 26.

Claims 27-30 ultimately depend from claim 26 and are believed to be patentable for at least the same reasons advanced with respect to claim 26.

New independent claim 31 recites the invention of claim 26 with the additional limitation that the drill bit is actually drilling through subsurface formations during the obtaining seismic wave data in the borehole. Such limitation is described in the Applicant's specification in paragraph [0024]. As explained above with reference to claims 18 and 26, Kan does not show making seismic wave measurements in a wellbore while the drill bit is disposed or is operating within such borehole. New claim 31 is believed to be

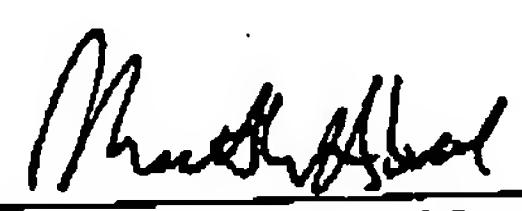
patentable over Kan for at least the same reasons explained above with reference to claims 18 and 26.

New claims 32-35 ultimately depend from claim 31 and are believed to be patentable for at least the same reasons advanced with respect to claim 31.

This paper is submitted in response to the Office Action dated July 21, 2006 for which the three-month date for response is October 21, 2006. A request for a one (2) month extension of the time to respond to the Official Action is hereby made, bringing the date for response to December 21, 2006. Please apply any charges not covered, such as the two-month extension fee of \$450, or any credits, to Deposit Account 19-0610 (Reference Number 19.0380).

Respectfully submitted,

Date: 12/21/06



Matthias Abrell, Reg. No. 47,377
Attorney for Applicant
Schlumberger Technology Corporation
200 Gillingham Lane
MD 200-9
Sugar Land, Texas 77478

Telephone: 281-285-8809

U.S. Patent Application No. 10/604,878
Atty. Docket No. 19.0380
Page 8